



Environment, Health and Safety

Campus Safety

Ergonomics

What is ergonomics?

Ergonomics can roughly be defined as the study of people in their working environment. More specifically, an ergonomist (pronounced like *economist*) designs or modifies the work to fit the worker, not the other way around. The goal is to eliminate discomfort and risk of injury due to work. In other words, the employee is our first priority in analyzing a workstation. Officially:

“

“Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.”

— ***International Ergonomics Association Executive Council, August 2000***

When evaluating a job, looking for three main characteristics known as ergonomic stressors: the force required to complete a task, any awkward or static working postures adopted in completing a task, and the repetitiveness of a task. Any of these factors, or any combination of these factors, may place someone at greater risk for discomfort.

Overview

The Department of Environment, Health and Safety's (EHS) purpose is to help all University employees create and maintain a healthy and safe working environment. The University's ergonomic program seeks to improve the health of its employees by minimizing ergonomic stressors. The objective of any safety initiative is to prevent injuries and illnesses by removing their causes. For musculoskeletal disorder hazards we can achieve this by eliminating or reducing employee exposure.

EHS wants to provide information and education to allow any employee to avoid injury. EHS wants to educate people on the basics of ergonomics. Not only will they be able to help themselves at work, but these principles can be applied to home, hobbies or help friends and coworkers who may have similar issues. Remember, knowledge is contagious.

Services EHS offers include:

- Providing information about ergonomics
- Giving on-campus training on ergonomics (as requested)
- Providing an online [ergonomic self-evaluation](https://ehs.unc.edu/topics/ergonomics/) tool. This tool will walk the individual through a self-evaluation and provide the user with recommendations to modify their workstation.

All employees are responsible for attending training on ergonomics via the EHS online orientation and for following proper work practices.

Departments are responsible for providing sufficient resources to implement ergonomic recommendations in a timely manner as well as ensuring that employees are properly trained.

EHS is responsible for evaluating and monitoring the ergonomic program including assessing the nature and extent of ergonomic hazards, recommending ways of minimizing or controlling these hazards, and supporting the University in consultation and direction regarding ergonomics. EHS is also responsible for ensuring that training on ergonomics is available to all employees.

If an employee is experiencing any signs or symptoms of musculoskeletal disorders that they feel are work-related, the employee is to report their symptoms to their supervisor and call the University Employee Occupational Health Clinic (UEOHC) at 919-966-9119 for a medical evaluation. The UEOHC will advise the employee, their supervisor, and the Environment, Health and Safety Office of the necessary follow-up.

Poor workplace designs can present ergonomic risk factors called stressors. These stressors include but are not limited to repetition, force, extreme postures, static postures, quick motions, contact pressure, vibration, and cold temperatures. (Ergonomics: The Study of Work, OSHA)

Repetition

Is the number of motions or movements that are performed per cycle or per shift

Force

Is the muscles used to produce force in order to perform necessary activities such as lifting, grasping, pinching, pushing, etc.

Extreme Postures

Is when muscles are required to work at a level near or at their maximum capacity.

Static Postures

A special type of awkward posture which occurs when a body part is not moving, but is still doing work. Examples include sitting in a chair or holding an object.

Contact Pressure

Is the pressure from resting part of the body against a sharp edge or corner. Resting the wrists or forearms on an edge of a desk while typing is one example.

Vibration

Exposure to local vibration occurs when a specific part of the body comes in contact with a vibrating object, such as a power handtool. Exposure to whole-body vibration can occur while standing or sitting in vibrating environments or objects, such as when operating heavy-duty vehicles or large machinery.

Cold Temperatures

Reduce the natural elasticity of the body and reduce the sensation of touch (tactile feedback). In order to get the same amount of tactile feedback, and employee may exert more force than is necessary.

Employee exposure to these stressors can cause injury or some type of MSD.

Symptoms of MSD identify that one or more ergonomic stressors may be present. There may be individual difference in susceptibility and symptoms among employees performing similar tasks. Any symptoms are to be taken seriously. The following list of symptoms can be but are not limited to:

- Numbness
- Tightness
- Tingling
- Swelling
- Pain
- Stiffness
- Redness

When an ergonomic hazard has been identified, the Environment, Health and Safety Office will work with the department in eliminating or minimizing the hazard. There are two general approaches to controlling ergonomic hazards: Engineering and Administrative.

Engineering Controls

Are changes made to the workstations, tools, and/or machinery that alter the physical composition of area or process.

Administrative Controls

Are changes made to regulate exposure without making physical changes to the area or process, for example taking frequent breaks and job rotations. In general, engineering control are preferred as their goal is to reduce the presence of hazards.

Ergonomics (or human factors) is the scientific discipline concerned with the understanding of the interactions among human and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.

Conditions that pose a biomechanical stress to the human body associated with increased risk for development of musculoskeletal disorders.

Musculoskeletal disorders (MSDs) are disorders of the muscles, nerves, tendons, ligaments, joints, cartilage and spinal discs. MSDs do not include disorders caused by slips, trips, falls, motor vehicle accidents, or other similar accidents. Examples of MSDs include: Carpal tunnel syndrome, Rotator cuff syndrome, De Quervain's disease, Trigger finger, Tarsal tunnel syndrome, Sciatica, Epicondylitis, Tendinitis, Raynaud's phenomenon, Carpet layers knee, Herniated spinal disc, and Low back pain.

Work activities and/or work conditions in which ergonomic stressors are present that are reasonably likely to cause or contribute to an MSD.

Q: I need to buy some equipment for my workstation (a keyboard tray, mouse bridge, etc.). Do I need permission from EHS?

A: No. Ergonomic equipment can be bought the same way as a stapler for your office. Talk to your department's business manager for information on ordering office equipment.

Q: Do I need permission from EHS to change an aspect of my workstation?

A: No. If you feel uncomfortable and moving your monitor makes you feel better, do it! Remember, if you are feeling pain that you believe is caused by or increased by your University work, contact the University Employee Occupational Health Clinic (UEOHC) as soon as possible.

Q: I feel that my workstation is improperly set up. What can I do?

A: EHS offers an ergonomic self-evaluation that asks questions and generates a report specific to your office or laboratory workstation. The ergonomic self-evaluation takes most people 30-45 minutes of uninterrupted time to complete.

Remember that for now, the self-evaluation is for those working in an “office” or “laboratory” workstation environment.

Q: Does EHS pay for my new equipment (like my keyboard tray)?

A: Your department pays for your new equipment.

Q: How do I know if my pain is work-related?

A: This is determined based on the medical evaluation at the UEOHC. If you have not already been to the UEOHC for your work-related pain, please do this as soon as possible. Call 919-966-9119 to schedule an appointment.

Q: I think I might have carpal tunnel syndrome. What do I do?

A: First, if you are experiencing pain that you feel is caused or increased by your University work, you need to make an appointment to visit the UEOHC as soon as possible.

Q: This piece of equipment has the label “ergonomic” on it. Does that mean it’s better than others?

A: Many products today tout themselves as “ergonomic” because there is no real standard for this term yet. It doesn’t necessarily mean it is better.

Ergonomics Programs

- [The Ergonomics Center of North Carolina](#)
- [Elements of Ergonomics Programs](#)

General Information

- [Ergoweb](#)
- [Duke University Ergonomics](#)
- [Yale University Ergonomics](#) 
- [Information and Resources on Common Ergonomics Related Topics](#)
- [Arthritis](#)
- [Handout on Health: Rheumatoid Arthritis](#)
- [Back Pain Introduction](#)
- [Handout on Health: Back Pain](#)
- [General Elbow Injuries and Disorders](#)
- [Tutorial on Lateral Epicondylitis \(tennis elbow\)](#)
- [Shoulder Injuries](#)
- [Rotator Cuff Injuries](#)
- [General Wrist and Arm Injuries](#)

- [Carpal Tunnel Syndrome](#)
- [Fibromyalgia](#)
- [General muscle anatomy and how muscles and tendons are injured](#)
- [Chiropractors](#)
- [National Safety Council](#)
- [Bureau of Labor Statistics](#)
- [American Industrial Hygiene Association \(AIHA\)](#)
- [Board of Certification in Professional Ergonomics \(BCPE\)](#)
- [The International Society for the Study of the Lumbar Spine](#)

Government Agencies

- [US Department of Labor, OSHA](#)
- [OSHA's Ergonomics website](#)
- [National Center for Health Statistics](#)
- [NC Dept. of Labor-OSHA, Ergonomics](#)
- [Government Accountability Office \(GAO\)](#)
- [NIOSH, National Institute of Occupational Safety & Health](#)
- [CDC, Center for Disease Control and Prevention](#)

Office Ergonomics

- [University of Maryland Ergonomics](#)

Ergonomic Associations

- [National Ergonomics Conference and Exposition](#)
- [The Ergonomics Society](#)
- [Human Factors and Ergonomics Society \(HFES\)](#)
- [Board of Certified Safety Professionals \(BCSP\)](#)
- [American Industrial Hygiene Association](#)

Miscellaneous

- [Cornell University Ergonomics Program](#)
- [NC State University Ergonomics Laboratory](#)
- [Ergonomics for Schools](#)

Ergonomics Topics



Lifting and Material Handling



Musculoskeletal Disorders



Office Ergonomics



Laboratory Ergonomics



Hospital Ergonomics



Home and Hobby Ergonomics

Policies, Training and Tools

- [Environment, Health and Safety Manual Chapter 2.5: General Policies – Ergonomic Program](#)
- [Employee Orientation](#)
- [Ergonomic Self-Evaluation](#)
- [Long-Distance Travel Ergonomics](#) 

i Associated Departments:

- Workplace Safety